

The key layout on the GlassMaster is designed to be easy to understand and efficient. Multifunction keys allow you to load and review saved programs with a minimum amount of key strokes.

Adjustments can be made even during the firing without interruption. Beginners and professionals alike will appreciate the logical design of the layout. There are two programming modes available on the GlassMaster.

LED Display

MENU allows access to advanced programming features.

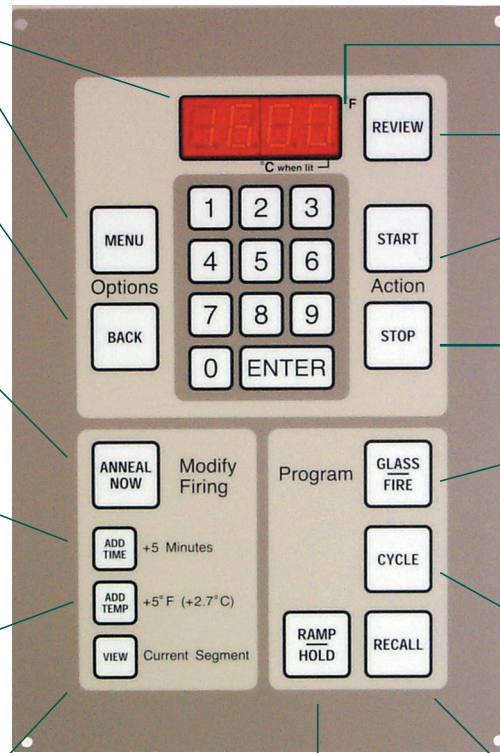
If an error is made the programmer can press **BACK** to input the correct data.

The **Anneal** key is pressed when the glass has attained the desired heatwork and the artist wishes to begin the annealing process.

Add Time key adds time to the final heating segment in increments of 5 minutes during the firing.

Add Temp adds 5 degrees F of heat to the final heating segment.

The **View** key will display the current segment of the firing program.



Temperature Scale Selection

The controller may be programmed to read temperatures in Fahrenheit or Celsius

The **Review** key displays the program that is currently loaded.

The **Start** key begins the program.

The **Stop** key will stop the program at any point in the firing.

The **Glass Fire** key accesses preset fusing, slumping, and tack fusing programs with choices of varying firing speeds.

The **Cycle** key is used in conjunction with the Glass Fire key to choose various options.

Ramp Hold allows the artist to construct and store their own specialized firing programs.

For quick access to stored Ramp Hold programs simply press the **Recall** key.

GLASS FIRE MODE

The Glass Fire Mode allows you to access factory installed programs designed for general fusing, slumping, and tack fusing. These programs were designed incorporating general heating and annealing principals. While they will not work for all projects, they are definitely a good place for beginners to start.

The Glass Fire Mode allows you to choose from 3 different firing speeds based on the size of your projects. These speeds are then correlated to the process selected and an annealing program.

RAMP HOLD MODE

The Ramp Hold Mode allows you to design and store your own programs for specialized projects. You can use up to 8 segments (16 segments when programs are linked). A segment consists of a heating or cooling rate, a temperature, and a hold time if one is desired. You can store up to 6 of your programs for easy recall.

The **Add Time**, **Add Temp**, and **Anneal** features allow you to control the final segment of the heating phase so the kiln begins annealing when you want it to.

The **View** key allows you to check the current segment. The LED constantly displays the temperature and hold times throughout the firing.

The **Menu** key allows the user to program Delayed Starts, Temperature Alarms and many other advanced features.

Please read the Kiln Safety and General Firing Guidelines before programming your kiln.

The **Glass Fire Mode** was designed to give beginners a starting point for their Fusing, Tack Fusing, and Slumping Projects. Using information from glass artists and manufacturers we developed preset firing programs based on the size of the piece and the type of process desired. There are many other variables that can effect the success of a firing project such as position in the kiln, accuracy of the thermocouple, strength of the elements and many others that relate to the properties of the glass. So please use the GlassMaster Firing Mode with this in mind. For more advanced projects you may want to design your own firing program using the Ramp and Hold Mode.

FAST	1/8" THICK - 18" DIAMETER OR SMALLER 1/4" THICK - 4" DIAMETER OR SMALLER 3/8" THICK - NOT RECOMMENDED
MEDIUM	1/8" THICK - 20" DIAMETER OR SMALLER 1/4" THICK - 8" DIAMETER OR SMALLER 3/8" THICK - 5" DIAMETER OR SMALLER
SLOW	1/8" THICK - 18" DIAMETER OR SMALLER 1/4" THICK - 18" DIAMETER OR SMALLER 3/8" THICK - 12" DIAMETER OR SMALLER 1/2" THICK - 8" DIAMETER OR SMALLER

The program asks for 2 pieces of data, **Speed** and **Process (process refers to whether the piece is to be Slumped, Tack Fused or Full Fused)**. Use the guidelines in the table above to determine the proper firing **Speed** for your project. When a speed is chosen the controller will set the Heating and Annealing portions of the program. When the process is selected the controller adjusts the 2 process segments of the program based on the process you select. For a complete list of Glass Fire Mode programs see the following page. To modify the peak temperature and hold times of these programs see the Modify Glass Fire menu instructions on page 17.

Glass Fire Mode Programming Steps

<p>Step 1 From Idle (IdLE) mode, press Glass Fire</p>	<p><i>(Kiln is in Idle mode when display is flashing "IdLE". If the kiln is reading "PF" press ENTER to return to Idle mode.)</i></p> <p>Display will read SPd(Speed).</p>
<p>Step 2 Press CYCLE key to toggle to one of the 3 firing speeds, either SLOW, MEd (Medium), or FAST. Press ENTER.</p>	<p>Display will read PROC (Process).</p>
<p>Step 3 Press the CYCLE key to toggle to one of the 3 firing processes, either SLMP (Slump), TAC (Tack Fuse) or FULL (Full Fuse).. Press ENTER.</p>	<p>Display will revert to Idle mode If the display reads °F it is in Modify Glass Fire Mode. See instructions on page 17 regarding "Modify Glass Fire".</p>
<p>Step 4 Press REVIEW to verify the correct program has been entered. Press START.</p>	<p>After pressing review the display will flash all the data entered. After pressing START the kiln will begin firing and display the internal temperature of the kiln. (If a Delay Start is programmed the display will begin counting down from the Delay time set).</p>
<p>Step 5 When the kiln reaches the process temperature range, visually inspect the glass and press ADD TEMP, ADD TIME, or ANNEAL NOW if needed.</p>	<p>The process temperature for Tack fusing is set for a minimum level of fusing. For a more aggressive level of fusing it will be necessary to Add Time or Temperature.</p>

GLASS FIRE MODE PROGRAMS (FAHRENHEIT)

Full Fuse Programs

Full Fuse - SLOW	1	2	3	4	5	6	7	8
Rate (°F/HR)	300	300	300	600	600	9999	30	60
Temperature (°F)	250	500	750	1250	1480	1000	970	750
Hold Time (HR.Min)	00.25	00.25	00.25	00.20	00.15	02.00	02.00	00.01
Full Fuse - MED	1	2	3	4	5	6	7	8
Rate (°F/HR)	500	500	500	600	600	9999	90	120
Temperature (°F)	250	500	750	1250	1480	1000	970	750
Hold Time (HR.Min)	00.12	00.12	00.12	00.20	00.15	01.00	01.00	00.01
Full Fuse - FAST	1	2	3	4	5	6	7	8
Rate (°F/HR)	800	800	800	600	600	9999	200	200
Temperature (°F)	250	500	750	1250	1480	1000	975	750
Hold Time (HR.Min)	00.05	00.05	00.05	00.20	00.15	00.10	00.20	00.01

Tack Fusing Programs

Tack Fuse - SLOW	1	2	3	4	5	6	7	8
Rate (°F/HR)	300	300	300	600	600	9999	30	60
Temperature (°F)	250	500	750	1250	1350	1000	970	750
Hold Time (HR.Min)	00.25	00.25	00.25	00.20	00.10	02.00	02.00	00.01
Tack Fuse - MED	1	2	3	4	5	6	7	8
Rate (°F/HR)	500	500	500	600	600	9999	90	120
Temperature (°F)	250	500	750	1250	1350	1000	970	750
Hold Time (HR.Min)	00.12	00.12	00.12	00.20	00.10	01.00	01.00	00.01
Tack Fuse - FAST	1	2	3	4	5	6	7	8
Rate (°F/HR)	800	800	800	600	600	9999	200	200
Temperature (°F)	250	500	750	1250	1350	1000	975	750
Hold Time (HR.Min)	00.05	00.05	00.05	00.20	00.10	00.10	00.20	00.01

Slumping Programs

Slump - SLOW	1	2	3	4	5	6	7	8
Rate (°F/HR)	300	300	300	600	600	9999	30	60
Temperature (°F)	250	500	750	1150	1220	1000	970	750
Hold Time (HR.Min)	00.25	00.25	00.25	00.05	00.05	02.00	02.00	00.01
Slump - MED	1	2	3	4	5	6	7	8
Rate (°F/HR)	500	500	500	600	600	9999	90	120
Temperature (°F)	250	500	750	1100	1220	1000	970	750
Hold Time (HR.Min)	00.12	00.12	00.12	00.05	00.05	01.00	01.00	00.01
Slump - FAST	1	2	3	4	5	6	7	8
Rate (°F/HR)	800	800	800	600	600	9999	200	200
Temperature (°F)	250	500	750	1100	1220	1000	975	750
Hold Time (HR.Min)	00.05	00.05	00.05	00.05	00.05	00.10	00.20	00.01

GLASS FIRE MODE PROGRAMS (CELSIUS)

Full Fuse Programs

Full Fuse - SLOW	1	2	3	4	5	6	7	8
Rate (°C/HR)	167	167	167	334	334	9999	17	34
Temperature (°C)	121	260	399	677	804	538	521	399
Hold Time (HR.Min)	00.25	00.25	00.25	00.20	00.15	02.00	02.00	00.01
Full Fuse - MED	1	2	3	4	5	6	7	8
Rate (°C/HR)	278	278	278	334	334	9999	50	67
Temperature (°C)	121	260	399	677	804	538	521	399
Hold Time (HR.Min)	00.12	00.12	00.12	00.20	00.15	01.00	01.00	00.01
Full Fuse - FAST	1	2	3	4	5	6	7	8
Rate (°C/HR)	444	444	444	334	334	9999	139	139
Temperature (°C)	121	260	399	677	804	538	521	399
Hold Time (HR.Min)	00.05	00.05	00.05	00.20	00.15	00.10	00.20	00.01

Tack Fusing Programs

Tack Fuse - SLOW	1	2	3	4	5	6	7	8
Rate (°CHR)	167	167	167	334	334	9999	17	34
Temperature (°C)	121	260	399	677	732	538	521	399
Hold Time (HR.Min)	00.25	00.25	00.25	00.20	00.10	02.00	02.00	00.01
Tack Fuse - MED	1	2	3	4	5	6	7	8
Rate (°C/HR)	278	278	278	334	334	9999	50	67
Temperature (°C)	121	260	399	677	732	538	521	399
Hold Time (HR.Min)	00.12	00.12	00.12	00.20	00.10	01.00	01.00	00.01
Tack Fuse - FAST	1	2	3	4	5	6	7	8
Rate (°C/HR)	444	444	444	334	334	9999	111	111
Temperature (°C)	121	260	399	677	732	538	521	399
Hold Time (HR.Min)	00.05	00.05	00.05	00.20	00.10	00.10	00.20	00.01

Slumping Programs

Slump - SLOW	1	2	3	4	5	6	7	8
Rate (°C/HR)	167	167	167	334	334	9999	17	34
Temperature (°C)	121	260	399	677	660	538	521	399
Hold Time (HR.Min)	00.25	00.25	00.25	00.05	00.05	02.00	02.00	00.01
Slump - MED	1	2	3	4	5	6	7	8
Rate (°C/HR)	500	500	500	334	334	9999	50	67
Temperature (°C)	121	260	399	677	660	538	521	399
Hold Time (HR.Min)	00.12	00.12	00.12	00.05	00.05	01.00	01.00	00.01
Slump - FAST	1	2	3	4	5	6	7	8
Rate (°C/HR)	800	800	800	334	334	9999	111	111
Temperature (°C)	121	260	399	677	660	538	521	399
Hold Time (HR.Min)	00.05	00.05	00.05	00.05	00.05	00.10	00.20	00.01